OZONE†

Chemical Identification			
CAS#	10028-15-6		
Formula	O_3		
Synonyms	triatomic oxygen		
Physical Properties			
Physical description	Colorless to blue gas with a very pungent odor.		
Boiling point	-169°F	**Molecular weight**	48.0
Freezing point/melting point	-315°F	**Vapor pressure**	>1 atm
Flash point		**Vapor density**	1.66
Specific gravity	1.614 at -319.7°F	**Ionization potential**	12.52 eV
Lower explosive limit (LEL)		**Upper explosive limit (UEL)**	
NFPA health rating		**NFPA fire rating**	
NFPA reactivity rating		**NFPA special instruction**	
Monitoring Methods Used by OSHA			
Analyte code (IMIS no.)	1980		

Chemical Identification			
Sampling group			
Sampler/Sampling media	Nitrite impregnated GFF - Ozone Sampling Filters and Cassettes [SLTC101]*		
Sampling time*	180 min at 0.5 L/min or up to 480 min when using the lower flow rate at 0.25 L/min		
Sampling volume (TWA)*	90-120 L		
Sampling flow rate (TWA)*	0.25-0.5 L/min		
Sampling volume (STEL/Peak/C)*	22.5 L		
Sampling flow rate (STEL/Peak/C)*	1.5 L/min		
Analytical method instruments	IC		
Method reference	OSHA ID-214 (fully validated)		
Notes	Sulfur dioxide (SO_2) is a sampling interference, and oxidizer tubes must be used if SO_2 is suspected to be present.		
Special requirements	*These media are prepared by SLTC as needed and are not available for immediate shipment. Please allow time		

Chemical Identification			
	for SLTC to prepare these media prior to sampling.		

· All sampling instructions above are recommended guidelines for OSHA Compliance Safety and Health Officers (CSHOs), please see the corresponding OSHA method reference for complete details.

Wipe Method	
Sampler/Sampling media	

Bulk Method

On-Site Screening Techniques						
Device	CMS Chip					
Model/Type	Ozone, 25-1000 ppb range					
Sampling information (see manufacturer instructions)						

Exposure Limits			
OSHA PEL 8-hour TWA (ST) STEL (C) Ceiling Peak	**NIOSH REL** Up to 10-hour TWA (ST) STEL (C) Ceiling	**ACGIH TLV©** 8-hour TWA (ST) STEL (C) Ceiling	**Cal/OSHA PEL** 8-hour TWA (ST) STEL (C) Ceiling Peak

On-Site Screening Techniques							
PEL-TWA	0.1 ppm (0.2 mg/m³)	**REL-TWA**		**TLV-TWA**	Heavy work: 0.05 ppm (0.10 mg/m³), Moderate work: 0.08 ppm (0.16 mg/m³), Light work: 0.10 ppm (0.20 mg/m³) [1995]	**PEL-TWA**	0.10 ppm (0.20 mg/m³)
PEL-STEL		**REL-STEL**		**TLV-STEL**		**PEL-STEL**	0.30 ppm (0.60 mg/m³)
PEL-C		**REL-C**	0.1 ppm (0.2 mg/m³)	**TLV-C**		**PEL-C**	
Skin notation	N	**Skin notation**	N	**Skin notation**	N	**Skin notation**	N
Notes: See 29 CFR 1910.1000 Table Z-1.		**Notes:**		**Notes:** Heavy, moderate, or light workloads: **(≥2 hours)**: 0.20 ppm (0.39 mg/m³) [1995]		**Notes:**	
Health factors: See NIH-NLM PubChem. **Note:** After searching for the chemical, see Section 13 Toxicity (13.1.3 - Health Effects).		**IDLH ppm**	5 ppm				
Carcinogenic classifications: TLV-A4		**Notes:**					
AIHA emergency response planning guidelines - ERPG-1/ERPG-2/ERPG-3:							

Additional Resources and Literature References

NOAA: CAMEO Chemicals - Ozone
NIOSH: Pocket Guide to Chemical Hazards - Ozone
Literature References

- ACGIH: *Documentation of the Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)* - Ozone. See annual publication for most recent information.
- Anderson, W., Prescott, G.J., Packham, S., Mullins, J., Brookes, M. and Seaton, A.: Asthma admissions and thunderstorms: a study of pollen, fungal spores, rainfall, and ozone. *QJM* 94(8): 429-433, 2001.
- California Occupational Safety & Health Standards Board: Initial and Final Statement of Reasons. August 3, 2010.
- NIOSH: *Occupational Health Guideline for Ozone*. September 1978.
- Olin, A.C., Andersson, E., Andersson, M., Granung, G., Hagberg, S. and Toren, K.: Prevalence of asthma and exhaled nitric oxide are increased in bleachery workers exposed to ozone. *Eur. Respir. J.* 23(1): 87-92, 2004.

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